Superior cerebellar artery aneurysm

- Endovascular Treatment of Wide-Neck Intracranial Aneurysms Using the Novel Contour Neurovascular System: 5-Year Follow-up
- Bilateral superior cerebellar artery pure arterial malformation masquerading as aneurysms
- Idiopathic Secondary Eosinophilia: Revealing Cerebral Aneurysms as a Vascular Complication
- Surgical anatomy of the labyrinthine artery - a systematic review and meta-analysis
- Middle Cerebral Artery Duplication Linked to Bilateral Duplication of the Superior Cerebellar Arteries
- Perioperative Stroke in MCA Aneurysm Surgery: The Hidden Risks of Amphetamine Use
- Right posterior cerebral artery fenestration coexisting with bilateral superior cerebellar artery duplications diagnosed by magnetic resonance angiography
- Exoscopic Clipping of a Superior Cerebellar Artery Aneurysm via a One-Piece Orbitozygomatic Approach: Educational Operative Video

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The incidence of aneurysms from the distal superior cerebellar artery (SCA) is only 0.2% of all intracranial aneurysms.

Location:

Proximal: Aneurysms located near the origin of the SCA from the basilar artery. Distal: Aneurysms located along the course of the SCA, further away from its origin. Shape:

Saccular or berry aneurysm: The most common type, characterized by a sac-like outpouching from the arterial wall. Fusiform aneurysm: A more elongated and spindle-shaped aneurysm involving a segment of the artery. Size:

Small aneurysms: Typically less than 10 mm in maximum diameter. Large aneurysms: Usually greater than 10 mm in maximum diameter.

Clinical features

Trigeminal neuralgia caused by superior cerebellar artery aneurysms (TGN-SCAAs) is a rare event without previous analysis.

Ros de San Pedro described the features based on 8 cases (7 from literature +1 illustrative case).

All cases were thoroughly studied with gathering of their epidemiological, radiological, clinical, therapeutic, and outcome data.

The mean age at diagnosis was 61 yr. Gender distribution showed a female predominance (M: F = 2:6). Side distribution had a left dominance (75%). The aneurysms mean size was 15.4 mm (range: 5-27). All 5 proximal SCAAs (SCA-Basilar junction) presented a lateral-posterior projection, while all 3

distal SCAAs (s2 segment) had variable projections but constant direct trigeminal nerve (TN) contact. No hemorrhage occurred. TGN was the clinical onset in all 8 cases. The most frequent pain distribution was V1-2-3 (n = 3), followed by V1-2 (n = 1) and V1 alone (n = 1). Proximal SCAAs caused TGN through direct TN compression (n = 1), third nerve compression (n = 1), cavernous sinus compression (n = 1), or a combination thereof (n = 2). However, all distal SCAAs caused TGN by direct TN compression (n = 3). Two different treatment options were used: clipping (n = 4) and coiling (n = 4). The post-treatment Barrow Neurological Institute score for pain control was I in all cases (100%). The mRS score was 0 in 75% of cases.

TGN-SCAAs are infrequent lesions, characterized by large size, variable TGN mechanisms depending on their anatomic location, and mostly affecting the first and second trigeminal divisions. Both SCAA clipping and coiling were used equally, providing good neurological and pain relief results [1].

Treatment

Several surgical procedures, including parent artery occlusion, clipping of the aneurysmal neck, trapping of the bleeding site, and wrapping of the aneurysm have been proven effective in preventing rupture of a distal SCA aneurysm.

However, due to difficulty conserving all of the perforating artery and maintaining the patency of the parent artery during the surgical procedure, satisfactory surgical occlusion or trapping cannot always be performed with distal SCA aneurysms. Therefore, surgical, endovascular, and combined approaches, based on their characteristics, such as size or location, have been widely used in treatment of these aneurysms.

Little information is available on endovascular approaches in treatment of distal SCA aneurysms [2].

A study includes a comparative analysis of the SCA aneurysms treated with microsurgery and endovascular techniques at the Department of Neurosurgery, Louisiana State University Health Sciences Centre, Shreveport, Louisiana, USA along with a pooled analysis of available literature on overall outcomes in these two forms of treatment.

This retrospective study included our patients with SCA aneurysms from 2000 to 2015. Clinical outcomes were assessed by the Glasgow outcome scale (GOS) at discharge and Modified Rankin scale (mRS) at follow-up. A literature review was performed for clinical series on SCA aneurysms from 1991 to 2015 describing more than 10 patients for pooled analysis.

Among the twenty patients (microsurgery=12, endovascular=8), 66% from microsurgery and 75% from endovascular arm had good outcomes (GOS score >3 and mRS score <3) (p=0.54). Microsurgery had 88.8% complete occlusion rate as compared to 75% in endovascular treatment (p=0.45). Pooled analysis of 12 studies showed endovascular coiling is significantly associated with good clinical outcome (88.1% vs 76.9%; p=0.003). Microsurgery provides better radiological outcome in terms of complete occlusion rate (90.1% vs 67.4%; p=0.0001) and lower recurrence rate (0% vs 11.8%; p=0.005).

Individual series on SCA aneurysms have not proven any outcome benefit of either treatment modality over the other. However, pooled analysis suggests that microsurgery provides complete and

sustainable aneurysm occlusion, though with an inferior clinical outcome [3].

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